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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/511,389

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Michael Geisler

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23859

7590

09/26/2006

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EXAMINER

ZERVIGON, RUDY

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 09/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/511,389

Applicant(s)

GEISLER ET AL.

Examiner

Rudy Zervigon

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1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 9 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 9 requires cathode rotation, however, the specification does not sufficiently describe supporting structure therefore.

### ***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-3, 8, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szczyrbowski, Joachim et al. (US 20020157945 A1) in view of Mikata, Yuichi (US 20010012697 A1). Szczyrbowski teaches a coating installation (Figure 1; Section [0013]-[0015]) with a vacuum chamber (5; Figure 1; Section [0013]-[0015]) exhibiting an suction port (17; Figure 1) and a gas feed (9,10; Figure 1), in which a sputtering cathode (7; Figure 1) and a substrate holder (substrate :mounted"; not shown; [0013]) are arranged and for which the vacuum chamber (5; Figure 1; Section [0013]-[0015]) is divided into a cathode chamber (upper 5; Figure 1) and a substrate chamber (lower 5; Figure 1) by an screen (13'; Figure 1) arranged

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between the sputtering cathode (7; Figure 1) and the substrate holder (substrate :mounted"; not shown; [0013]) – claim 1

Szczyrbowski further teaches:

- i. Coating installation (Figure 1; Section [0013]-[0015]) in accordance with claim 1, characterized in that the sputtering cathode (7; Figure 1) is a double magnetron cathode, as claimed by claim 8
- ii. Coating installation (Figure 1; Section [0013]-[0015]) in accordance with claim 1, characterized in that a metering device (18; Figure 1) for reactive gas is arranged in the cathode chamber (upper 5; Figure 1) and that the regulated output (19; Figure 1) of the sputtering cathode (7; Figure 1) exhibited in the coating installation (Figure 1; Section [0013]-[0015]) is directly dependent on the concentration of the reactive gas in the cathode chamber (upper 5; Figure 1), as claimed by claim 10

Szczyrbowski does not teach:

- i. the cathode chamber (upper 5; Figure 1) as well as the substrate chamber (lower 5; Figure 1) each respectively exhibit a direct suction port (17; Figure 1) and their own gas feed (9,10; Figure 1), and that the gas feed (9,10; Figure 1) into the cathode chamber (upper 5; Figure 1) is connected to a process gas source and that the gas feed (9,10; Figure 1) for the substrate chamber (lower 5; Figure 1) is connected to a reactive gas source – claim 1
- ii. Coating installation (Figure 1; Section [0013]-[0015]) in accordance with claim 1, characterized in that the cathode chamber (upper 5; Figure 1) and the substrate chamber (lower 5; Figure 1) are each respectively connected to their own vacuum pump stand (11, 17), as claimed by claim 2

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- iii. Coating installation (Figure 1; Section [0013]-[0015]) in accordance with claim 1, characterized in that in the cathode chamber (upper 5; Figure 1) as well as in the substrate chamber (lower 5; Figure 1), the gas feed (9,10; Figure 1) and the suction port (17; Figure 1) are arranged on opposite sides, as claimed by claim 3
- iv. Coating installation (Figure 1; Section [0013]-[0015]) in accordance with claim 1, characterized in that the ratio of the focal aperture length of the screen (13'; Figure 1), measured in the transport direction of the substrate (8; Figure 1), to the width of the sputtering cathode (7; Figure 1), measured in the transport direction of the substrate (8; Figure 1), amounts to less than 0.75, preferably to between 0.5 and 0.3, as claimed by claim 11

Mikata teaches a deposition chamber (Figure 3) including a shutter (410; Figure 3) dividing the chamber in two. Each chamber is shown with its individual process gas supply (11,12) and exhaust ports (421, 419).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Szczyrkowski to add plural gas source ports and vacuum ports as taught by Mikata, and for Szczyrkowski to optimize the relative dimension of Szczyrkowski's apparatus.

Motivation for Szczyrkowski to add plural gas source ports and vacuum ports as taught by Mikata, and for Szczyrkowski to optimize the relative dimension of Szczyrkowski's apparatus is for promoting uniformity of process gas distribution to reduce nonuniform depositions as taught by Mikata ([0005]). Further, it is well established that the duplication of parts is obvious (In re Harza , 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04). Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the

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art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)

5. Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szczyrkowski, Joachim et al. (US 20020157945 A1) and Mikata, Yuichi (US 20010012697 A1) in view of Szczyrkowski; Joachim et al. (US 5082546 A). Szczyrkowski and Mikata are discussed above. Szczyrkowski and Mikata do not teach:

- i. Coating installation (Figure 1; Section [0013]-[0015]) according to claim 1, characterized in that an anode is arranged in the vacuum chamber (5; Figure 1; Section [0013]-[0015]) between the sputtering cathode (7; Figure 1) and the substrate (8; Figure 1), as claimed by claim 4
- ii. Coating installation (Figure 1; Section [0013]-[0015]) in accordance with claim 1, characterized in that the anode in the substrate chamber (lower 5; Figure 1) is arranged to be covered by the screen (13'; Figure 1) between the screen (13'; Figure 1) and the substrate holder (substrate :mounted"; not shown; [0013]), as claimed by claim 5
- iii. Coating installation (Figure 1; Section [0013]-[0015]) in accordance with claim 1, characterized in that the anode is formed by two unheated tubes, as claimed by claim 6
- iv. Coating installation (Figure 1; Section [0013]-[0015]) in accordance with claim 1, characterized in that the anode simultaneously forms the screen (13'; Figure 1), as claimed by claim 7

Szczyrkowski; Joachim et al. (US 5082546 A) teaches a sputtering apparatus (Sole Figure; column 1; lines 14-40) including a tubular anode (6; Figure 1) arranged in the vacuum chamber

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between the cylindrical (tubular) sputtering cathode (3,3a-c; Sole Figure) and the substrate (1 Sole Figure). Lehan further teaches rotating cylindrical magnetron.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Szczyrkowski, Joachim et al. (US 20020157945 A1) and Mikata to add Szczyrkowski; Joachim et al. (US 5082546 A) anode.

Motivation for Szczyrkowski, Joachim et al. (US 20020157945 A1) and Mikata to add Szczyrkowski; Joachim et al. (US 5082546 A) anode is for arc-free and cleaning-free processing as taught by Szczyrkowski; Joachim et al. (US 5082546 A; column 1; lines 29-31).

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Szczyrkowski, Joachim et al. (US 20020157945 A1) and Mikata, Yuichi (US 20010012697 A1) in view of Lehan; John et al. (US 5814195 A). Szczyrkowski and Mikata are discussed above. Szczyrkowski and Mikata do not teach the coating installation (Figure 1; Section [0013]-[0015]) in accordance with claim 1, characterized in that the sputtering cathode (7; Figure 1) is a rotating cathode, as claimed by claim 9.

Lehan teaches a rotatable cylindrical magnetron (Figure 4) used in sputtering depositions.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Szczyrkowski, Joachim et al. (US 20020157945 A1) and Mikata to replace Szczyrkowski's magnetron with Lehan's rotatable cylindrical magnetron (Figure 4).

Motivation for Szczyrkowski, Joachim et al. (US 20020157945 A1) and Mikata to replace Szczyrkowski's magnetron with Lehan's rotatable cylindrical magnetron (Figure 4) is for removing an anode as a contamination source during processing as taught by Lehan (column 1; lines 25-40).

***Response to Arguments***

7. Applicant's arguments filed July 17, 2006 have been fully considered but they are not persuasive.

8. Applicant's argument with respect to the Examiner's rejection under 112, 1<sup>st</sup> paragraph is not persuasive. That rotating cathodes are "well known" may be an accurate statement, however, this premise is complicated by a wide array of shapes and structures for cathodes. In particular one cathode may be more easily rotated in a particular reactor and another depending on the shapes and structures of each. A skilled artisen may not know how to rotate Applicant's claim 9 cathode with Applicant's specified structures.

9. Applicant states:

“

The Examiner states that Mikata discloses an apparatus which has two chambers, each of which is connected to a gas feed and an exhaust. The Examiner further contends that it would have been obvious to one of ordinary skill in the art for Szczyrkowski to add plural gas source ports and vacuum ports, as taught by Mikata. However, this combination of apparatuses would not be operable.

“

Applicant then goes on to describe the operation of each of the Examiner's references. However, Applicant states:

“

Mikata, therefore, teaches to separate the reactive gas and inert gas from each other by a cover. This process would not work with Szczyrkowski because there must be a steady flow of particles



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sputtered off the target onto the substrate for the apparatus in Szczyrkowski to function. Thus, a modification of the cited references to include the elements of the present invention would prevent the respective Szczyrkowski and Mikata apparatuses from being used as designed, which undermines an obviousness rejection.

“

In response, the Examiner notes that the Examiner's proposed combination does not include any reference to reproducing Mikata's "process" of "to separate the reactive gas and inert gas from each other by a cover". In fact, the Examiner's proposed combination states "It ... for Szczyrkowski to add plural gas source ports and vacuum ports as taught by Mikata, and for Szczyrkowski to optimize the relative dimension of Szczyrkowski's apparatus.". No reference is made for reproducing methods in either reference. The Examiner's proposed combination is strictly structural, as the pending apparatus claims are. That the Examiner's proposed combination would have motivation, and thus functionality once combined, is exhibited by Mikata ([0005]) whose gas introduction and exhausting arrangement supports promoting uniformity in process gas distribution to reduce nonuniform depositions.

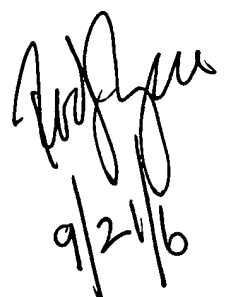
10. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

  
9/21/16